**Unit Title: Structure & Language of Geometry**

**Organizing Concept: *Congruence: Transformations***

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| **Questions to Assess Prior Knowledge:**  *Solve the equations*  ;  *Plot the following points* A(2, 5); B(-1, 2); C(-3, -4); D(4, -2) ;  *Write the in its simplest form* |
| **Questions to Draw-out Misconception**  What is the difference between congruence and equality?  Which of these are measurable? (point, line, plane, ray, segment) |
| **DOK 1:**  Draw acute ;  Perform the transformations on this figure: rotation, reflection |
| **DOK 2:**  Wallpaper picture: Describe the transformations used to generate this pattern.  Given an endpoint and the midpoint of a line segment, find the other endpoint and the length of the entire segment.  Given a diagram, identify a pair of parallel and skew lines. |
| **DOK 3:**  Compare and contrast the differences between parallel and skew lines. |
| **DOK:4**  Using rotations, reflections and translations to design a wallpaper pattern. |
| **Literacy – Writing to Learn:**  In 3 or 4 sentences describe the similarities and differences between the transformations we have studied. |

**Organizing Concept: *Congruence: Proof and Construction***

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| **Questions to Assess Prior Knowledge:**  What is congruence?  What are conjectures?  What is a proof? |
| **Questions to Draw-out Misconceptions:**  Is giving an example proof?  What is the difference between solving and proving?  When do I need to justify my thinking and how do I do it?  What is the difference between a sketch and a construction? |
| **DOK 1:**  Define supplementary and complementary angles.  Draw and label supplementary angles. |
| **DOK 2:**  Create a table to organize all the algebraic and geometric symbols we have used.  Given a pair of vertical angles and the measure of angle 1 is 5x+2 and angle 2 is 3x+26 find the measure of each angle. |
| **DOK 3:**  Prove vertical angle theorem.  Use the basic constructions to create a square. |
| **DOK:4**  Using constructions create a transformation of a logo and explain the process you used. |
| **Literacy – Writing to Learn:**  Write a short paragraph to compare and contrast angle bisectors and segment bisectors.  Write 3-4 sentences about the differences between postulates and conjectures. |

**Organizing Concept: *Mathematical Practices: Proof***

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| **Questions to Assess Prior Knowledge:**  What is logical reasoning and how do we use it to make decisions? |
| **Questions to Draw-out Misconceptions:**  Where do you start a proof?  How do you know when you are done with a proof? |
| **DOK 1:**  What is the difference between inductive and deductive reasoning? |
| **DOK 2:**  Use inductive reasoning to complete the tables and find the rules for the nth term.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 3 | 4 | 5 | 6 | 10 | 20 | n | | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 2 | 3 | 4 | 5 | 6 | 10 | n | | 4 | 9 | 16 | 25 |  |  |  | |
| **DOK 3:**  Given Q is the midpoint of line segment PR, find the length of PQ, QR and PR. QR = 5x + 1, PQ = 6x – 7. Write a proof justifying each step to your solution. |
| **DOK:4**  Use the Pythagorean Theorem to prove the distance formula. |
| **Literacy – Writing to Learn:**  Using 3-4 complete sentences discuss two different ways of justifying a mathematical statement. |